

7. The microbead of claim 1, wherein the fungal cell is *Candida albicans* and/or the bacterial cell is *Pseudomonas aeruginosa* (lux) or *Staphylococcus aureus*.

8. The microbead of claim 1, wherein the composition releases at least about 0.2-50 μg of an antimicrobial agent per hour.

9. The microbead of claim 1, wherein the microbead is biodegradable over at least about one, two, three, four, or five days, or one, two, three, or four weeks.

10. A method for producing a chitosan microbead, the method comprising:

- (a) dissolving chitosan in an acidic solution;
- (b) adding magnetic nanoparticles and an agent to the solution;
- (c) providing a mixture of surfactant, oil, and a polymer; and
- (d) adding the chitosan solution of step (a) to the oil and incubating until beads form.

11. The method of claim 1, wherein step (a) further comprises incorporating an effective amount of one or more agents into the solution.

12. A microbead generated according to the method of claim 11.

13. A method for treating or preventing an infection in a subject at a site of trauma, the method comprising contacting the site with a chitosan microbead of any one of claims 1-9 and applying an external stimulus.

14. The method of claim 13, wherein the trauma is selected from the group consisting of a fracture, open fracture, wound, complex wound, and surgical site.

15. The method of claim 13, wherein the agent is selected from the group consisting of an analgesic, angiogenic agent, antimicrobial, antibody, antifungal, anti-inflammatory, anti-thrombotic, chemotherapeutic, growth factor, hormone, or steroid agent.

16. The method of claim 14, wherein the antimicrobial agent is selected from the group consisting of antifungal, antibacterial, and antiviral agents.

17. The method of claim 14, wherein the antimicrobial agents are amphotericin B, vancomycin, and/or amikacin.

18. The method of claim 14, wherein the effective amount of the agent is sufficient to reduce the survival or proliferation of a bacterial cell.

19. The method of claim 14, wherein the composition releases at least about 0.2-50 μg of an antimicrobial agent per hour.

20. The method of claim 14, wherein the method reduces fungi or bacteria present at the site by at least about 20-100% at 72 hours after contact with the chitosan-microbead composition relative to an untreated control site.

21. The method of claim 13, wherein the external stimulus is a magnetic field.

22. A method for the local and temporally controlled delivery of an agent to a site, the method comprising contacting the site with a chitosan microbead comprising an agent and applying an external stimulus at a desired time point, thereby temporally controlling delivery of the agent to the site.

23. The method of claim 22, wherein the agent is selected from the group consisting of an analgesic, angiogenic agent, antimicrobial, antibody, antifungal, anti-inflammatory, anti-thrombotic, chemotherapeutic, growth factor, hormone, or steroid agent.

24. The method of claim 22, wherein the microbead releases about 2 μg -1000 mg of the agent in 1-72 hours.

25. The method of claim 22, wherein the stimulus is a magnetic field.

26. The method of claim 22, wherein the stimulus is applied for 30 minutes.

27. A kit comprising a chitosan microbead of claim 1 for use in treating a trauma site or delivering an agent.

28. The kit of claim 24, wherein the chitosan microbead comprises an agent selected from the group consisting of an analgesic, angiogenic agent, antimicrobial, antibody, antifungal, anti-inflammatory, anti-thrombotic, chemotherapeutic, growth factor, hormone, or steroid agent.

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